DRAFT

Dissolved Oxygen (DO) Criteria for Mount Hope Bay and Taunton River Estuary

Meeting Notes: Marine Dissolved Oxygen- Technical Advisory Committee (TAC) meeting

March 9, 2017

Welcome and introductions (TAC Members and Project Team) (see attendees in attachment)

Project Overview (Mass DEP)

- Kim Groff covered the project overview including project roles for Mass DEP, Normandeau, Tetra Tech, and TAC, Background, Current WQS (MA), Goals, Timeline (See power point)

Data gathering and literature review/sharepoint (Normandeau, Tetra Tech) Debbie ~~Retecki~~ Rutecki and Jennifer Flippin

- Described the literature search performed thus far (initial collection of VA Province laboratory data, identification of data and potential reference/least disturbed sites, habitat info for Mt. Hope Bay)

Review of Species distributions in Mt. Hope Bay and Taunton River Estuary (Normandeau)

- Threatened and Endangered Species—include Atlantic Sturgeon, shortnose sturgeon, northern diamondback terrapin, harbor seals, some other marine mammals. Other species of concern include alewife, blueback herring, cusk, rainbow smelt
    - Question about whether marine mammals are of concern in this effort (not because of their DO needs but because they may rely on species affected by low DO). It was suggested that we are not interested in air breathing animals/ marine mammals information because a DO criteria should protect forage fish.
- Commercially, Economically, or Ecologically important species—
    - Jane suggested that RI may have already identified a list of sensitive species that could be compared to our findings in Mt. Hope Bay (**Jane action item)**
    - Invertebrates are not often identified in ~~Brayden~~ Brayton Point data, but more information might be available in data from URI trawls
    - American lobster might be in decline due to stressors other than (or in addition to) low DO
- Species that use the area for spawning or nursery, what? where? and when?
- Habitat types in the study area
- Next steps, Discussion
    - Likely that softshell clams aren't caught/reported in trawl data.
    - Additions to Table 7
        - Todd suggested addition of black sea bass, butterfish, softshell clam to list of species of interest. Todd also suggested that fisheries distribution data has been different in the last few years with more occurrences of butterfish and black seabass (not reflected in past surveys)
        - ~~TAC member~~John Logan suggested tomcod and horseshoe crab
    - Peter asked if the study area uses an IBI to describe macroinvertebrate condition; group consensus was that no such IBI is used
    - Richard suggested adding known DO data status to the species in Table 7 (**Debbie Action Item**)

- The panel noted that sea level rise/climate change/increased precipitation might change the distribution of fishes in the future
- Currently gathering information about additional macroinvertebrate surveys like URI data (**Debbie action item)**
- Next steps:
    - Review literature related to habitat and seasonality (**Debbie action item)**
    - Define relevant study area; how far upstream in the Taunton do criteria apply; what is the salinity cutoff, etc. The project will focus on marine habitats, but a clear geographical cutoff will be helpful **(DEP action item)**
    - Review Table 7 and provide comments about species that should be added to or removed from the list of representative organisms (**TAC action item. Please provide comments by March 23)**

Overview of DO Criteria Development Approaches (Tetra Tech) (see presentation)

- Virginia Province Approach (EPA 2000)
    - Identification of some species with available VA province data
    - Data appropriate for this methodology are laboratory-derived toxicity values. Not available for all species. May be appropriate to consider surrogate species data to make sure all important taxa are considered. Can use other field data/non standard laboratory data to "ground truth" criteria values developed by the VA Province approach
    - Approach can be tailored and different criteria can be developed on the basis of when and where species occur
- Reference Approach - Identification of locations with DO Data that may represent least impacted conditions (Plan for evaluation of natural fluctuation of DO, duration, frequency)
    - May be able to use observations of naturally occurring DO trends to develop DO criteria or suggest duration/frequency components of criteria
    - Need help identifying appropriate reference sites and data. The panel agreed that the area is generally heavily impacted by anthropogenic influence and these areas might not exist.
    - Modeled data could be used to estimate reference conditions, but modeling is likely out of scope for the current effort
- Chesapeake Bay Type Approach that assigns different DO criteria to different habitats, seasons, etc (EPA 2003)
    - Makes use of different zones, species to tailor criteria for protection in different seasons and for particularly sensitive organisms
    - Approach can be time/resource consuming to develop and challenging to monitor/determine compliance
    - A full Chesapeake Bay approach is not likely to be feasible in the current study area due to geographical area and structure of Mt. Hope Bay and Taunton River estuary. Some basic components of this approach might be useful (seasonality, focus on sensitive species, etc)
- Other items for discussion:
    - Use of percent saturation vs. mg/L for DO criteria
    - Next meeting we will highlight DO criteria in surrounding states
- Next steps, Discussion
    - Next steps
        - Refine VA Province Species list based on species list recommended by TAC **(Tetra Tech action item)**

- Develop initial criteria values—acute, chronic, and larval recruitment (**Tetra Tech action item)**

To do:

Next TAC April 19th Worcester office

Normandeau/ Tetra Tech – publish meeting notes; reach out to states on experience to date with adopted criteria using the Virginian providence and other approaches.

MassDEP – develop rational for spatial extent of the area that the DO review covers, look for salinity data

TAC - review Table 7 Species Lists – provide input by March 24th to Debbie ~~Reteckii~~Rutecki, finalize at the next TAC, upload data references to SharePoint by March 23

Normandeau -

- Add the following species to the preliminary species list: black sea bass, butterfish, softshell clam, Atlantic nutworm, Atlantic tomcod, and horseshoe crab.
- Highlight the species that have VA Province dissolved oxygen data in the preliminary species list.
- Review diet studies for potential species.
- Place references in presentation/background information handout into TAC SharePoint site.
- Review BPS beach seine data for other additional species not observed elsewhere in the monitoring program.

- Ask BPS to use their raw dissolved oxygen data and some fisheries (trawl/ichthyoplankton data) for this dissolved oxygen criteria development.
- Check access to the Taunton River Desalination Plant benthic grab data, if I have access to this data review the data for potential important benthic species.
- Review salinity, dissolved oxygen, and depth data to determine if MA waters in Mt. Hope Bay have enough structure to warrant the Chesapeake Bay Approach.
- Check access to the Taunton River Desalination Plant salinity data, if I have access to this data review the data.

RIDEM
Gather data and References for sharpoint (Chris Deacuitis), habitat reference

URI – will provide for data, trawls surveys with DO data, RIDEM fish trawls, 2 trawl station. Dan C., set thresholds, do frequency. send paper

Glen Thursby - Provide information on Virginia Providence % Sat

Jeanne Voorhees provide information on - Florida - % saturation- Delaware Bay % sat

Dissolved Oxygen (DO) Criteria for Mount Hope Bay and Taunton River Estuary
Technical Advisory Committee (TAC)

Name	Affiliation	Phone	e-mail	Attended
Todd Callaghan	MA Coastal Zone Management	(617) 626-1233	todd.callaghan@state.ma.us	y
Phil Colarusso	U.S. Environmental Protection Agency	(617) 918-1506	Colarusso.phil@Epa.gov	n
Dan Arsenault	U.S. Environmental Protection Agency		Arsenault.dan@epa.gov	y
John Logan	Department of Fish and Game	(508) 990-2860 x141	john.logan@state.ma.us	y
Candice Oviatt	URI Graduate School of Oceanography	(401) 874-6661	coviatt@uri.edu	n
Heather Stoffel	URI Graduate School of Oceanography	(401) 874-6860/(401)855-2329	stoffelh@hotmail.com	Y (phone)
Jane Sawyers	Rhode Island DEM	(401) 222-4700	jane.sawyers@dem.ri.gov	y
Paul Stacey	Great Bay National Estuarine Research Reserve	(603) 294-0146	Paul.Stacey@wildlife.nh.gov	Y (phone)
Toby Stover	EPA Region 1	(617) 918-1604	Stover.Toby@epa.gov	y
Peter Tango	USGS/Chesapeake Bay Program	(410) 267-9875	ptango@chesapeakebay.net	y
Glen Thursby	USEPA, Atlantic Ecology Division/ORD	(401) 782-3178	Thursby.glen@Epa.gov	Y (phone)
Jeanne Voorhees	EPA Region 1	(617) 918-1686/ (978) 361-5273	voorhees.jeanne@epa.gov	Y (phone)
Project Staff				
Rebecca Weidman	MassDEP	(617) 654-6612	rebecca.weidman@state.ma.us	Y
Richard Carey	MassDEP	(508) 767-2894	richard.carey@state.ma.us	y
Kimberly Groff	MassDEP	(508) 767-2876	kimberly.groff@state.ma.us	y
Jennifer Flippin	Tetra Tech		Jennifer.Flippin@tetratech.com	y
Ben Jessup	Tetra Tech	(802) 229.1059	Benjamin.Jessup@TetraTech.com	y
Bob Murphy	Tetra Tech		Bob.Murphy@TetraTech.com	
Harry Stewart	Normandeau	(603) 472-5191	hstewart@normandeau.com	y
Clair Meehan	Tetra Tech	(508) 734.5513	clair.meehan@tetratech.com	n

Name	Affiliation	Phone	e-mail	Attended
Debbie Rutecki	Normandeau	(603) 472-5191	drutecki@normandeau.com	y
Dana Henry	Donahue Institute	(617) 287-4068	DHenry@donahue.umassp.edu	n